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## Swamp-dwelling weavers of the *Ploceus velatus/vitellinus* complex, with the description of a new species

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In this paper we use the generic name *Ploceus* in the broad sense of, e.g. White (1963) and Hall & Moreau (1970). White (pp. 133-134) uses the single specific name *velatus* for the above complex, and briefly but usefully defines subspecific differences. Hall & Moreau (p. 284) divide *velatus* into 2 groups, a southern *velatus* and a northern *vitellinus*; the northernmost form of the former being *P. velatus reichardi*, of southwestern Tanzania. This form is above all distinctive in that the male in breeding dress has the yellow of the breast and flanks heavily overlaid with chestnut. The fore part of the crown is relatively extensively chestnut (as in the *vitellinus* rather than the *velatus* group), while the greens and yellows of the plumage as a whole are unusually bright. The *vitellinus* group as recognised by Hall & Moreau is associated with dry woodlands and savannas. So too through most of its range is the *velatus* group, but with some notable exceptions in the northeast of its range.

The form *reichardi* seems to be typically associated with swamps, perhaps entirely so in the breeding season (in the rains): a point that is not mentioned by Britton (1980). It seems also to be often markedly colonial in its nesting (Böhm 1885: 70, as *Hyphantornis vitellinus*; Vesey-FitzGerald 1956, Beesley 1956), Beesley mentioning colonies varying in numbers from 4 to 150. Vesey-FitzGerald & Beesley (1960: 108) do also record its occurrence in woodland, but as in the following form this may merely represent off-season wandering.

The form *katangae*, of northeastern Zambia northward from Lake Bangweulu, and in adjacent Zaire by the River Luapula and Lake Mweru, and at Musosa (Benson *et al.* 1971, Schouteden 1971: 220), is likewise essentially a swamp-dweller. Ecologically it contrasts strikingly with nominate *velatus* (or according to Clancey 1974: 76, *sbe'leyi*), probably essentially confined as a breeder to dry *Acacia* woodland. Yet the 2 forms, of which *katangae* is very markedly the smaller (with no overlap, sex by sex, in wing-length), occur within 100 miles (160 km) of one another. Although Aspinwall (1974: 11) and Taylor (1977: 55) do give records of *katangae* from dry ground away from swamps, like *reichardi* it seems to be virtually confined

to swamps when breeding. Benson & Pitman (1956: 40) give some information on breeding. It may be that *katangae*, unlike *reichardi*, never breeds in large colonies of 150 nests. Apart from swamps, these authors (*op. cit.*: 8) do also record it as nesting in bushes on dry ground on Katema Island, but this island is near the eastern shore of the shallow, muddy Lake Mweru-wa-Ntipa, and only c.  $\frac{1}{4}$  mile (400 m) in circumference.

Another likely swamp associate is the form *upembae*, known from Kadia, 8°16'S, 26°35'E, and Mabwe, 8°42'S, 26°28'E, in the Upemba National Park, southeastern Zaire. The co-ordinates for both these localities are from Chapin (1954: 671, 695), and indicate that they are respectively near the eastern extremity of Lake Kisale and on the east shore of Lake Upemba. Schouteden (1971: 221) cites both localities, and Verheyen (1953: 612) Mabwe, but neither author gives any information about the habitat. There is also a female from Bukama, 9°10'S, 25°50'E, in the Koninklijk Museum voor Midden-Afrika (KMMA). White (1963: 134) indicates unequivocally that *upembae* is a swamp associate, and there is a strong presumption that this is correct, if only from the situations of Kadia and Mabwe. According to Verheyen (*op. cit.*), *upembae* is a solitary nester.

Benson & Pitman (1956: 40) liken the nest of *katangae* (unspouted, entrance downwardly directed) to that of *tabatali* (=nominated *velatus* in Benson *et al.* 1971; *shelleyi* in Clancey 1974: 76). Indeed, all the forms in the *velatus/vitellinus* complex seem to have this type of nest. For the nest of *reichardi*, see the photographs in Vesey-FitzGerald (1956), for that of *velatus* in South Africa, see the drawing in McLachlan & Liversidge (1978: 572), and for the *vitellinus* group that in Crook (1960: 8). For comparative photographs of the two, obviously made of different materials, see Collias & Collias (1964: pl. 27), who also (pp. 71-80) describe the nests of various forms and in fact (p. 79) liken the nest of *reichardi* to that of *taeniopterus*, though they could examine only 2 of the former.

A NEW SPECIES FROM THE UPPER LUFIRA,  
SOUTHERN ZAIRE; ITS APPARENT NEAREST RELATIVE *reichardi*

Ruwet (1965: 413-414) has discussed the breeding habits of the swamp-dwelling *P. melanocephalus* in the swamps bordering the lake Lufira (i.e. Lake Shangalele, or Tshangalele—cf. Times Atlas, 1975: 203, at 10°50'S, 27°03'E, and map in Ruwet 1963: facing 60). Ruwet records several colonies, including one of more than 20 nests, without giving any details of the type of structure, although Plate 1B indicates a similarity to that in the *velatus/vitellinus* complex. It is quite possible that *melanocephalus* does occur in this area, the form *duboisii* being definitely known from as near as the River Luapula and the Lomami District (Benson *et al.* 1971, Schouteden 1971: 219); yet only one specimen was collected, at Kinsamba, near the eastern edge of the maximum level of the lake (map in Ruwet 1963). Verheyen is cited as attributing it to the form *dimidiatus*, whereas Schouteden was dubious about its true identity. Indeed, Schouteden (1971: 221, 223) records only *P. xanthops* and *ocularis* in the name of Ruwet from the Lufira area.

The Kinsamba specimen, a male in almost complete breeding dress, in the KMMA, No. 113379, bearing no precise date of collection (but probably March 1960—Ruwet, pers. comm.) has been compared by both of us with every conceivable form of *Ploceus* (males in breeding dress), both in the

KMMA and in the British Museum (Natural History) (BMNH). From the strong chestnut wash on the chest and flanks, *a priori* it might be supposed to be possibly related to *P. dicrocephalus*, *jacksoni*, *intermedius* (chestnut present in *P. i. intermedius* and *beattyi*) or indeed *melanocephalus* (of which some forms, including *dimidiatus*, are washed with chestnut, but not so *duboisii*). In fact it differs markedly from all these in bill shape, and we believe that its nearest relative is *reichardi*. For reasons to be explained below, we propose giving it full specific status (and likewise *reichardi* and *katangae*). Accordingly we name it:—

***Ploceus ruweti* sp. nov.**

*Description of the unique holotype.* Similar in colour and dimensions to the male in breeding dress of *P. reichardi*, but immediately distinguishable by much more extensive black on the top and sides of the head. The chestnut of the crown is replaced by black, merging sharply into the yellow of the nape (see Plate 1A). The ear-coverts are wholly black, whereas in *reichardi* black is restricted to below the level of the eye (see again Plate 1A), the remainder being yellow. There are also less marked differences: the dusky centres to the feathers of the wing-coverts in *ruweti* are more pronounced and the yellow tones are not so strong, this being best marked on the nape, pale lemon-yellow instead of golden yellow, but also apparent on the rump and abdomen. Conformably, the green of the mantle and back is duller, less yellowish. (It is possible that this dilution of the greens and yellows in *ruweti* is due to immersion of the specimen for an unspecified period in formalin.)

TABLE I

	Measurements in mm of <i>P. ruweti</i> and <i>P. reichardi</i>			
	wing	tail	culmen (from skull)	tarsus
		<i>P. ruweti</i>		
1 ♂	71	45	16	20.5
		<i>P. reichardi</i>		
1 ♂ (type)	68	46	16	21
2 ♂♂	70, 72	46, 47	16, 16.5	21, 21.5
10 ♂♂	67-71 (69.5)	42-46 (44.3)	16-18 (16.8)	20-22 (21.0)
1 ♀	64	40	15.5	19

(a) Measurements by Louette from material in the Zoologisches Museum, Berlin (ZMB): type from Karema, other 2 specimens from Karema, Membwa.

(b) Measurements by Benson from material in the BMNH.

Comparative measurements of *ruweti* and *reichardi* are given in Table 1. The figures for *reichardi* in the BMNH are from more or less the same material as studied by Benson (1955) (although an extra male has now been found), but from only one instead of 3 females, i.e. the one dated 15 July (1936) and which is inseparable in colour from a female of *katangae* taken in the same month. The 1955 culmen measurements are unaccountably shorter, although stated to have been taken from the base of the skull and Benson can only suggest that they might have been of the exposed part only.

THE SYSTEMATIC STATUS OF *katangae*,  
*upembae*, *reichardi* AND *ruweti*

Measurements of *katangae* taken by Benson from material in the BMNH are given in Table 2. Evidently *katangae* is similar in dimensions to *reichardi*

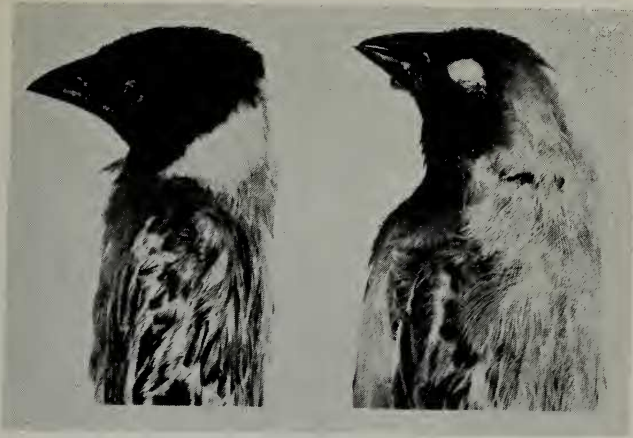


Plate 1A. Left, head of *Ploceus ruweti* ♂, right, of *P. reichardi* ♂. (See Louette & Benson)  
Photo: M. J. Ashby.



Plate 1B: Nest attributed to *Ploceus ruweti*. (See Louette & Benson) Photo: J. C. Ruwet.



Plate IIA. Colony of nests in Lufira delta, attributed to *Ploceus ruweti*. (See Louette & Benson)  
Photo: J. C. Ruwet.



Plate IIB. Habitat typical of *Ploceus ruweti*, Lufira delta. (See Louette & Benson) Photo:  
J. C. Ruwet.

(and apparently *ruweti*). The measurements of wing and culmen for *katangae* from a wider panel in Benson (1955) show no significant difference, although as for *reichardi* (above) the culmen measurements are unaccountably shorter. As to *upembae*, in neither colour nor dimensions does it differ strikingly from *katangae*. While Louette finds that females may be a trifle more olive yellow on the head and mantle, the most significant difference is perhaps that the bill is up to 2 mm longer (Verheyen 1953: 612, Benson 1955). Louette measured 3 *upembae* ♂♂—2 from Mabwe in the Koninklijk Belgisch Instituut voor Natuurwetenschappen (KBIN), Brussels, one from Kadia in the KMMMA, as follows:—wing 66-69.5 (67.8), tail 45 (one), culmen (from skull) 17-19 (18), tarsus 20 (one) mm.

TABLE 2  
Measurements in mm of *P. katangae*

	wing	tail	culmen (from skull)	tarsus
7 ♂♂	67-70 (69.0)	43-46 (44.9)	16-18 (17.2)	20-22 (21.0)
6 ♀♀	62-64 (63.0)	40-41 (40.3)	15.5-16 (15.9)	18.5-19.5 (19.1)

There is no strong reason against regarding *katangae* and *upembae* as conspecific. As to *reichardi* and *ruweti*, originally Benson speculated that they might be combined in a species distinct from *katangae*, on account of the rich suffusion of chestnut on the underparts and despite the greater extent of black on the head in *ruweti*. (Note that in *P. cucullatus* the crown is black in the males of all forms except the 2 southernmost, in which it is yellow—cf. White 1963: 135-137). It seemed possible that such a species could not co-exist with the species *katangae* because of similar ecological requirements accompanied by little or no difference in size, disregarding the rather longer bill of *upembae*. Nevertheless for the present we prefer to regard *reichardi* and *ruweti* as specifically distinct. The extent of black on the head in *ruweti* is particularly striking. Ruwet (1965: 413) also records *P. velatus*, but does not appear to have obtained a supporting specimen. The record needs to be confirmed. If indeed it could be proved that the species *katangae* is represented in the Lufira area, then the specific status of *ruweti* would be confirmed beyond any doubt. Ruwet (1965: 415) also records *P. xanthopterus*, but this has been questioned by Irwin & Benson (1966: 20), since in Zambia it is only known from Upper Zambezi drainage, above the Victoria Falls. One also wonders what may be the "*Texitor velatus*" that Poelman (1967) records from Kasapa, 11°34'S, 27°25'E, stating that it lives along rivers or marshes and does not leave them.

An inspection of map 331 in Hall & Moreau (1970) shows that their *velatus* group has barely penetrated the moist woodland belt of southern Africa except in certain isolated areas of swamp already referred to above. These areas are apparent on the map in Keay (1959) as type 20, "Undifferentiated relatively dry types", and described in the text (p. 9) as "alluvial savannas of tall grass with certain species of *Acacia*". From experience in Zambia, Benson can state that large areas of such alluvium are so moist as to be incapable of supporting the growth of any trees (unless one regards ambatch *Sesbania* spp. as such). So the term "swamp" as already used above

(and see also Benson *et al.* 1971: 24) seems appropriate. It is only in such areas that the *velatus* group (*sensu* Hall & Moreau) is represented. These authors give as one difference between their *velatus* and *vitellinus* groups that in *vitellinus* the crown (of the male in breeding dress) is suffused with chestnut. That this is so in *reichardi* has already been mentioned, and it applies to a lesser degree to *katangae* (including *upembae*). Thus these 3 forms show some evidence of being intermediate between the 2 groups, as might be expected on geographical grounds. Clancey (1974: 72) has alluded to the status of these swamp-dwellers, seemingly implying as one possible course their recognition as a discrete species, under the name *reichardi*. In the past *reichardi* has sometimes been regarded as a monotypic species, as indeed quite recently by Mackworth-Praed & Grant (1955) and Vesey-FitzGerald & Beesley (1960).

It seems that under present climatic conditions the *velatus* and *vitellinus* groups cannot exist in the moist *Brachystegia* ("Miombo") woodlands proper (vegetation types 18 and 19 in Keay 1959), but have managed to adapt to swamps in type 20, isolated within such woodlands. Such a habitat is favoured by certain other species of *Ploceus* in southern Africa, such as *xanthopterus*, *subaureus* and *melanocephalus*, while others, such as *xanthops* and *cucullatus*, are associated with water to some degree. Thus such an adaptation by the *velatus* group might be achieved fairly easily.

We favour Clancey's suggestions that *reichardi* be regarded as a full species. We would also extend Hall & Moreau's groups, adding a third, the *reichardi* group. Pending further detailed investigation of their biology (including nest structure and building technique), we would take a further step, and split this group into 3 species:—*P. reichardi*, *P. katangae* (to include *upembae* as a subspecies) and *P. ruweti*.

Although similar in dimensions, colour-differences in these 3 species are very well marked, doubtless due to isolation in the moist woodlands by which they are surrounded. At present, the only possible difference that might be suspected in their biology is that *reichardi* can breed in quite large colonies (of up to 150 nests); but this may not be of any significance, since the number of nests grouped together even in this species may be as low as 4.

There are many instances of related forms showing a distributional gap between southern (or southwestern) and northern (or northeastern) Africa under existing climatic conditions. An extreme example is provided by another weaver, *P. rubiginosus* (map 332 in Hall & Moreau 1970), restricted to exceptionally dry country. Disregarding the swamp-associates, *P. velatus* (map 331, *op. cit.*) provides a much less extreme instance of this phenomenon. The *reichardi* group, dividing the drier country *velatus* and *vitellinus* groups, provides only one of a number of instances of a representative in the moist woodland belt. Thus, in an entirely different family, the barbets Capitonidae, the *Lybius leucomelas* superspecies consists of 3 species, one in the moist woodland belt (*L. frontatus*), with another each in drier *Acacia* woodland respectively to the south and northeast (map 349 in Snow 1978). In this case it seems that there has been an adaptation by proto-*frontatus* stock direct from a drier to a moister type of woodland, rather than to swamp (a most unlikely habitat for any barbet) as in the *reichardi* group.

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